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(19) **United States**(12) **Patent Application Publication** (10) Pub. No.: **US 2001/0051297 A1****Nemoto et al.**(43) Pub. Date: **Dec. 13, 2001**(54) **LITHIUM SECONDARY BATTERY**(52) U.S. Cl. 429/129; 429/184; 429/164;
429/174(75) Inventors: **Hiroshi Nemoto**, Nagoya-city (JP);
Teruhisa Kurokawa, Ama-gun (JP);
Kenshin Kitoh, Nagoya-city (JP)Correspondence Address:
BURR & BROWN
PO BOX 7068
SYRACUSE, NY 13261-7068 (US)(73) Assignee: **NGK Insulators, Ltd.**(21) Appl. No.: **09/870,372**(22) Filed: **May 30, 2001****Related U.S. Application Data**(63) Continuation-in-part of application No. 09/114,323,
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H01M 2/02(57) **ABSTRACT**

A lithium secondary battery comprises a case, an internal electrode body positioned inside the case, the internal electrode body comprising at least one positive electrode, at least one negative electrode and at least one separator interposed between the positive electrode and the negative electrode, the positive electrode and the negative electrode being electrically insulated from each other, at least one electrolyte contained inside the case, a first terminal electrically connected to the negative electrode, a second terminal electrically connected to the positive electrode, and at least one insulator positioned either between the case and at least one of the first and second terminals, the insulator comprising ethylene-propylene rubber. A second embodiment of a lithium secondary battery comprises a body member, an internal electrode body positioned inside the body member, the internal electrode body comprising at least one positive electrode, at least one negative electrode and at least one separator interposed between the positive electrode and the negative electrode, the positive electrode and the negative electrode being electrically insulated from each other, at least one electrolyte contained inside the body member, a first terminal electrically connected to the negative electrode, a second terminal electrically connected to the positive electrode, at least one end cap, and at least one insulator positioned between the body member and the at least one end cap, the insulator comprising ethylene-propylene rubber.

